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EXAMINER	
WONG, EDNA	

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1753	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/789,175	CAPPER ET AL.	
	Examiner	Art Unit	
	Edna Wong	1753	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *13 August 2007*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-10 and 43-64* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-10 and 43-64* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *August 13, 2007*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

This is in response to the Amendment dated August 13, 2007. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office Action.

Response to Arguments

Specification

The disclosure has been objected to because of minor informalities.

The objection of the disclosure has been withdrawn in view of Applicants' amendment.

Claim Objections

Claim **6** has been objected to because of minor informalities.

The objection of claim 6 has been withdrawn in view of Applicants' amendment.

Claim Rejections - 35 USC § 112

Claims **3-4, 6 and 43-44** have been rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

With regards to claims 3-4 and 43-44, the rejection has been withdrawn in view of Applicants' amendment.

With regards to claim 6, the rejection under 35 U.S.C. 112, second paragraph, is

as applied in the Office Action dated March 14, 2007 and incorporated herein. The rejection has been maintained for the following:

lines 19-20, the phrase "(wherein Z independently may be H, an alkali metal ion, or Z_2 may be an alkaline earth metal ion)" is indefinite.

Please remove the parentheses in the claim.

Claim Rejections - 35 USC § 102

I. Claims **1-4 and 7** have been rejected under 35 U.S.C. 102(b) as being anticipated by **JP 6-116781** ('781).

The rejection of claims 1-4 and 7 has been withdrawn in view of Applicants' amendment.

II. Claims **43 and 44** have been rejected under 35 U.S.C. 102(b) as being anticipated by **JP 6-116781** ('781).

The rejection of claims 43 and 44 under 35 U.S.C. 102(b) as being anticipated by JP 6-116781 ('781) has been withdrawn in view of Applicants' amendment.

III. Claims **1, 3-4 and 7** have been rejected under 35 U.S.C. 102(b) as anticipated by **JP 64-68488** ('488).

The rejection of claims 1, 3-4 and 7 under 35 U.S.C. 102(b) as anticipated by JP 64-68488 ('488) has been withdrawn in view of Applicants' amendment.

IV. Claim **43** has been rejected under 35 U.S.C. 102(b) as anticipated by **JP 64-68488** ('488).

The rejection of claim 43 under 35 U.S.C. 102(b) as anticipated by **JP 64-68488** ('488) has been withdrawn in view of Applicants' amendment.

V. Claims **1-4 and 7** have been rejected under 35 U.S.C. 102(b) as being anticipated by **Irie et al.** (US Patent No. 4,581,107).

The rejection of claim 1-4 and 7 under 35 U.S.C. 102(b) as being anticipated by Irie et al. has been withdrawn in view of Applicants' amendment.

VI. Claims **43 and 44** have been rejected under 35 U.S.C. 102(b) as being anticipated by **Irie et al.** (US Patent No. 4,581,107).

The rejection of claims 43 and 44 under 35 U.S.C. 102(b) as being anticipated by Irie et al. has been withdrawn in view of Applicants' amendment.

Claim Rejections - 35 USC § 102/103

I. Claims **1-4 and 7** have been rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over **Wolski et al.** (US Patent No. 4,572,768).

The rejection of claim 1-4 and 7 under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Wolski et al. has been

withdrawn in view of Applicants' amendment.

II. Claim **43** has been rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over **Wolski et al.** (US Patent No. 4,572,768).

The rejection of claim 43 under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Wolski et al. has been withdrawn in view of Applicants' amendment.

III. Claims **1-4, 8 and 10** have been rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over **Yanagawa et al.** (US Patent No. 4,877,496).

The rejection of claims 1-4, 8 and 10 under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Yanagawa et al. has been withdrawn in view of Applicants' amendment.

Claim Rejections - 35 USC § 103

I. Claims **1-10** have been rejected under 35 U.S.C. 103(a) as being unpatentable over **GB 2,104,920** ('920) in combination with **JP 06-116781** ('781).

The rejection of claim 1-10 under 35 U.S.C. 103(a) as being unpatentable over GB 2,104,920 ('920) in combination with JP 06-116781 ('781) is as applied in the Office

Action dated March 14, 2007 and incorporated herein. The rejection has been maintained for the following reasons:

Applicants state that the claims now specify that component (c), i.e., where present, Sb^{+3}, is present at a concentration ranging from about 0.01 g/dm^3 to about 10 g/dm^3, which is equivalent to 10 to 10,000 mg/dm^3, i.e., 10-10,000 ppm, and thereby fully distinguishes the contended combination

Applicants state that the discussion in paragraph [0012] states that if too much Sb is used, corrosion resistance will fall. These disclosures constitute a clear teaching away from the use of higher concentrations.

In response, 5 ppm reads on "**about** 0.01 g/dm^3" or **about** 10 ppm.

A *prima facie* case of obviousness exists where claimed ranges and prior art ranges do not overlap but are close enough that one skilled in the art would have expected them to have the same properties (MPEP § 2144.05(I)).

If the composition is physically the same, it must have the same properties. Products of identical chemical composition cannot have mutually exclusive properties. A chemical composition and its properties are in separable (MPEP § 2112.01(II)).

II. Claims **43 and 44** have been rejected under 35 U.S.C. 103(a) as being unpatentable over **GB 2,104,920** ('920) in combination with **JP 06-116781** ('781).

The rejection of claims 43 and 44 under 35 U.S.C. 103(a) as being unpatentable over GB 2,104,920 ('920) in combination with JP 06-116781 ('781) is as applied in the

Office Action dated March 14, 2007 and incorporated herein. The rejection has been maintained for the reasons as discussed above.

Applicants' remarks have been fully considered but they are not deemed to be persuasive.

Response to Amendment

Claim Objections

Claims **1, 43, 45, 54 and 64** are objected to because of the following informalities:

Claim 1

lines 6-9, recite "with the proviso that when the ionic species comprises Te^{+4}, the bath further comprises one or more additional ionic species selected from ions of Bi^{+3}, Sb^{+3}, Ag^{+1}, Cd^{+2}, Co^{+2}, Cr^{+3}, Cu^{+2}, Fe^{+2}, In^{+3}, Mn^{+2}, Mo^{+6}, P^{+3}, Sn^{+2} and W^{+6}".

Claim 43

lines 8-12, recite "with the proviso that when the ionic species comprises Te^{+4} the bath is free of a mixture of brighteners comprising both (i) reaction product of epihalohydrin with an alkylene amine and (ii) aromatic aldehydes".

Claims 45, 54 and 64

lines 1-4, recite "wherein the alkylene amine of (i) comprises ethylenediamine or

its methyl-substituted derivatives; propylenediamine or its methyl-substituted derivatives; diethylenetriamine or its methyl-substituted derivatives; or a higher alkylene polyamine".

The provisos are only effective for Te^{+4} and dependent claims 45, 54 and 64 would not further limit their parent claim if the other species, i.e., Bi^{+3} or Sb^{+3}, are met.

Appropriate correction is required.

Claim Rejections - 35 USC § 112

Claims **50, 60 and 64** are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 50

line 19-20, the phrase "**(**wherein Z independently may be H, an alkali metal ion, or Z_2 may be an alkaline earth metal ion**)**" is indefinite. Please remove the parentheses.

Claim 60

lines 19-20, the phrase "**(**wherein Z independently may be H, an alkali metal ion, or Z_2 may be an alkaline earth metal ion**)**" is indefinite. Please remove the parentheses.

Claim 64

line 1, "*the alkylene amine of (i)* comprises ethylenediamine or its methyl-substituted derivatives; propylenediamine or its methyl-substituted derivatives; diethylenetriamine or its methyl-substituted derivatives; or a higher alkylene polyamine" lacks antecedent basis.

Claim Rejections - 35 USC § 103

I. Claim **45** is rejected under 35 U.S.C. 103(a) as being unpatentable over **GB 2,104,920** ('920) in combination with **JP 06-116781** ('781) as applied to claims 1-10 above.

GB '920 and JP '781 are as applied as discussed above and incorporated herein.

The electroplating bath of GB '920 differs from the instant invention because GB '920 does not disclose wherein the alkylene amine of (i) comprises ethylenediamine or its methyl-substituted derivatives; propylenediamine or its methyl-substituted derivatives; diethylenetriamine or its methyl-substituted derivatives; or a higher alkylene polyamine, as recited in claim 45.

The proviso is only effective for Te^{+4} and dependent claim 45 would not further limit the parent claim if the other species, i.e., Bi^{+3} or Sb^{+3}, are met.

II. Claims **46-47 and 49-54** are rejected under 35 U.S.C. 103(a) as being unpatentable over **GB 2,104,920** ('920) in combination with **JP 06-116781** ('781) as

applied to claims 43 and 44 above.

GB '920 and JP '781 are as applied as discussed above and incorporated herein.

III. Claim **48** is rejected under 35 U.S.C. 103(a) as being unpatentable over **GB 2,104,920** ('920) in combination with **JP 06-116781** ('781) as applied to claims 43 and 44 above, and further in view of **JP 64-68488** ('488).

GB '920 and JP '781 are as applied as discussed above and incorporated herein.

The electroplating bath of GB '920 differs from the instant invention because GB '920 does not disclose wherein the concentration of Bi^{+3} is in the range from *0.2 to 2 g/dm^2*, as recited in claim 48.

Like GB '920, JP '488 teaches an electroplating bath for depositing a zinc-nickel alloy. JP '488 teaches that adding 1 to 100 mg/l of Bi^{+3} ions to the bath increases a nickel content of a plating layer and the corrosion resistance of the plating layer (page 4, line 24 to page 5, line 12).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the bath described by GB '920 with wherein the concentration of Bi^{+3} is in the range from 0.2 to 2 g/dm^2 (= 200 mg/l to 2000 mg/l) because adding 1 to 100 mg/l of Bi^{+3} ions to the bath would have increased a nickel content of a plating layer and the corrosion resistance of the plating layer as taught by JP '488 (page 4, line 24 to page 5, line 12).

It has been held that changes in temperature, concentration or both, is not a

patentable modification; however, such changes may impart patentability to a process if the ranges claimed produce new and unexpected results which are different in kind and not merely in degree from results of the prior art, such ranges are termed "critical" ranges and Applicant has the burden of proving such criticality; even though Applicant's modification results in great improvement and utility over the prior art, it may still not be patentable if the modification was within capabilities of one skilled in the art; more particularly, where general conditions of the claim are disclosed in the prior art, it is not inventive to discover optimum or workable ranges by routine experimentation. *In re Aller*, 220 F2d 454, 456, 105 USPQ 233, 235 (CCPA 1955) and MPEP § 2144.05.

IV. Claims **55-64** are rejected under 35 U.S.C. 103(a) as being unpatentable over **GB 2,104,920** ('920) in combination with **JP 06-116781** ('781) and **JP 64-68488** ('488).

GB '920 and JP '781 are as applied for reasons as discussed above and incorporated herein.

The electroplating bath of GB '920 differs from the instant invention because GB '920 does not disclose wherein the concentration of $\underline{Bi^{+3}}$ is in the range from $\underline{0.2 \text{ to } 2 \text{ g/dm}^2}$, as recited in claim 58.

Like GB '920, JP '488 teaches an electroplating bath for depositing a zinc-nickel alloy. JP '488 teaches that adding 1 to 100 mg/l of Bi^{+3} ions to the bath increases a nickel content of a plating layer and the corrosion resistance of the plating layer (page 4, line 24 to page 5, line 12).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the bath described by GB '920 with wherein the concentration of Bi^{+3} is in the range from 0.2 to 2 g/dm^2 because adding 1 to 100 mg/l of Bi^{+3} ions to the bath would have increased a nickel content of a plating layer and the corrosion resistance of the plating layer as taught by JP '488 (page 4, line 24 to page 5, line 12).

It has been held that changes in temperature, concentration or both, is not a patentable modification; however, such changes may impart patentability to a process if the ranges claimed produce new and unexpected results which are different in kind and not merely in degree from results of the prior art, such ranges are termed "critical" ranges and Applicant has the burden of proving such criticality; even though Applicant's modification results in great improvement and utility over the prior art, it may still not be patentable if the modification was within capabilities of one skilled in the art; more particularly, where general conditions of the claim are disclosed in the prior art, it is not inventive to discover optimum or workable ranges by routine experimentation. *In re Aller*, 220 F2d 454, 456, 105 USPQ 233, 235 (CCPA 1955) and MPEP § 2144.05.

V. Claims **1, 3-8, 10 and 45** are rejected under 35 U.S.C. 103(a) as being unpatentable over **GB 2,104,920** ('920) in combination with **JP 64-68488** ('488).

GB '920 teaches an electroplating bath for depositing a zinc-nickel ternary or higher alloy, comprising:

(a) zinc ions (= from zinc chloride) [page 2, lines 22-28];

(b) nickel ions (= from nickel chloride hexahydrate) [page 2, lines 22-28]; and

(c) one or more non-ionogenic, surface active polyoxyalkylene compound (page 2, lines 78-85).

The zinc ion (= at least 10 g/l of zinc up to the maximum solubility of zinc) [page 2, lines 11-15] and nickel ion (= at least 15 g/l up to the maximum solubility of nickel in the bath) [page 2, limes 15-19] are present in the bath at concentrations sufficient to deposit the alloy comprising a nickel content from about 3 wt% to about 25 wt% of the alloy (= which contains at least 5% by weight of nickel) [page 1, lines 124-128].

The zinc ion (= at least 10 g/l of zinc up to the maximum solubility of zinc) [page 2, lines 11-15] and nickel ion (= at least 15 g/l up to the maximum solubility of nickel in the bath) [page 2, limes 15-19] are present in the bath at concentrations sufficient to deposit the alloy comprising a nickel content from about 8 wt% to about 22 wt% of the alloy (= which contains at least 5% by weight of nickel) [page 1, lines 124-128].

The one or more non-ionogenic surface active polyoxyalkylene compound comprises:

(i) at least one compound having a formula:

$$R^1\text{-}O\text{-}[(CH_2)_nO]_xH \qquad \text{(Ia)}$$

or

$$R^1\text{-}O\text{-}[(CHR^2CH_2O]_xH \qquad \text{(Ib)}$$

or

$$R^1\text{-}O\text{-}[(CH_2CHR^2)O]_xH \qquad \text{(Ic)}$$

wherein R^1 is an aryl or alkyl group containing up to about 24 carbon atoms, R^2 is an alkyl group containing from 1 to about 4 carbon atoms, n is 2 or 3, and x is an integer between 2 and about 100;

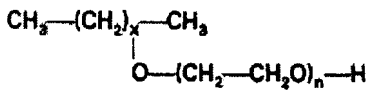
(ii) one or more compound having a formula:

$$R^3\text{-}O\text{-}[R^4\text{-}O\text{-}]_n\text{-}X \qquad \text{(IIa)}$$

or

$$(R^3\text{-}O\text{-}[R^4\text{-}O\text{-}]_n)_a\text{-}Y \qquad \text{(IIb)}$$

wherein R^3 = a C_1-C_{18} branched or unbranched alkyl, alkylene or alkynyl group, or phenyl-O-$[R^5$-O-$]_m$-CH_2-, in which m = 0-100 and R^5 is a C_1-C_4 branched or unbranched alkylene; R^4 = C_1-C_4 branched or unbranched alkylene; X = H, -SO_2Z, -SO_3Z, -SO_4Z, -PO_4Z_2 (wherein Z independently may be H, an alkali metal ion, or Z_2 may be an alkaline earth metal ion) –NH_2, -Cl or –Br; Y is an aliphatic polyhydroxy group, an amine group, a polyamine group or a mercaptan group, and a is equal to or less than the number of active hydrogens in OH, -NH, NH_2 or -SH groups on the Y component; or

(iii) a mixture of two or more of (i) and/or (ii) [= ] (page 2, lines 105-117).

The bath comprises an acidic pH (= a pH of 4.7 to 8) [page 3, lines 103-115].

The bath comprises an alkaline pH (= a pH of 4.7 to 8) [page 3, lines 103-115] and further comprises a complexing agent (page 3, lines 116-120).

The complexing agent comprises an aliphatic amine, a polymer of an aliphatic amine, a compound represented by the formula

$$R^7(R^6)N\text{-}R^{11}\text{-}N(R^9)R^{10} \qquad (V)$$

wherein R^7, R^8, R^9 and R^{10} are each independently alkyl or hydroxyalkyl groups provided that one or more of R^7-R^{10} is a hydroxy alkyl group, and R^{11} is a hydrocarbylene group containing up to about 10 carbon atoms, or a mixture of two or more thereof (= Quadrol) [page 3, lines 120-128].

The electroplating bath of GB '920 differs from the instant invention because GB '920 does not disclose the following:

a. Wherein the electroplating bath comprises from about *0.01 g/dm^2 to about 10 g/dm^2* of one or more ionic species selected from ions of Te^{+4}, *Bi^{+3}* and Sb^{+3}, with the proviso that when the ionic species comprises Te^{+4}, the bath further comprises one or more additional ionic species selected from ions of Bi^{+3}, Sb^{+3}, Ag^{+1}, Cd^{+2}, Co^{+2}, Cr^{+3}, Cu^{+2}, Fe^{+2}, In^{+3}, Mn^{+2}, Mo^{+6}, P^{+3}, Sn^{+2} and W^{+6}, as recited in claim 1.

Like GB '920, JP '488 teaches an electroplating bath for depositing a zinc-nickel alloy. JP '488 teaches that adding *1 to 100 mg/l of Bi^{+3} ions* to the bath increases a nickel content of a plating layer and the corrosion resistance of the plating layer (page 4, line 24 to page 5, line 12).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the bath described by GB '920 with wherein the electroplating bath comprises from about 0.01 g/dm^2 to about 10 g/dm^2 (= 10 mg/l to 10000 mg/l) of one or more ionic species selected from ions of Te^{+4}, Bi^{+3} and Sb^{+3}, with the proviso that when the ionic species comprises Te^{+4}, the bath further comprises one or more additional ionic species selected from ions of Bi^{+3}, Sb^{+3}, Ag^{+1}, Cd^{+2}, Co^{+2}, Cr^{+3}, Cu^{+2}, Fe^{+2}, In^{+3}, Mn^{+2}, Mo^{+6}, P^{+3}, Sn^{+2} and W^{+6} because adding 1 to 100 mg/l of Bi^{+3} ions to the bath would have increased a nickel content of a plating layer and the corrosion resistance of the plating layer as taught by JP '488 (page 4, line 24 to page 5, line 12).

b. Wherein the concentration of *Bi^{+3}* is in the range from *0.2 to 2 g/dm^2*, as recited in claim 5.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the concentration of Bi^{+3} is described by JP '488 with wherein the concentration of Bi^{+3} is in the range from 0.2 to 2 g/dm^2 because adding 1 to 100 mg/l of Bi^{+3} ions to the bath would have increased a nickel content of a plating layer and the corrosion resistance of the plating layer as taught by JP '488 (page 4, line 24 to page 5, line 12).

It has been held that changes in temperature, concentration or both, is not a patentable modification; however, such changes may impart patentability to a process if the ranges claimed produce new and unexpected results which are different in kind and

not merely in degree from results of the prior art, such ranges are termed "critical" ranges and Applicant has the burden of proving such criticality; even though Applicant's modification results in great improvement and utility over the prior art, it may still not be patentable if the modification was within capabilities of one skilled in the art; more particularly, where general conditions of the claim are disclosed in the prior art, it is not inventive to discover optimum or workable ranges by routine experimentation. *In re Aller*, 220 F2d 454, 456, 105 USPQ 233, 235 (CCPA 1955) and MPEP § 2144.05.

c. Wherein the alkylene amine of (i) comprises ethylenediamine or its methyl-substituted derivatives; propylenediamine or its methyl-substituted derivatives; diethylenetriamine or its methyl-substituted derivatives; or a higher alkylene polyamine, as recited in claim 45.

The proviso is only effective for Te^{+4} and dependent claim 45 would not further limit the parent claim if the other species, i.e., Bi^{+3} or Sb^{+3}, are met.

VI. Claims **1-4, 6-10 and 45** are rejected under 35 U.S.C. 103(a) as being unpatentable over **GB 2,104,920** ('920) in combination with **Irie et al.** (US Patent No. 4,581,107).

GB '920 is as applied for the reasons as discussed above and incorporated herein.

The electroplating bath of GB '920 differs from the instant invention because GB

'920 does not disclose the following:

a. Wherein the electroplating bath comprises from about *0.01 g/dm^2 to about 10 g/dm^2* of one or more ionic species selected from ions of Te^{+4}, Bi^{+3} and *Sb^{+3}*, with the proviso that when the ionic species comprises Te^{+4}, the bath further comprises one or more additional ionic species selected from ions of Bi^{+3}, Sb^{+3}, Ag^{+1}, Cd^{+2}, Co^{+2}, Cr^{+3}, Cu^{+2}, Fe^{+2}, In^{+3}, Mn^{+2}, Mo^{+6}, P^{+3}, Sn^{+2} and W^{+6}, as recited in claim 1.

b. Wherein when the ionic species comprises one or more of Bi^{+3} or *Sb^{+3}*, the bath further comprises one or more additional ionic species selected from ions of Ag^{+1}, Cd^{+2}, Co^{+2}, Cr^{+3}, Cu^{+2}, Fe^{+2}, *In^{+3}*, Mn^{+2}, Mo^{+6}, P^{+3}, Sn^{+2} and W^{+6}, as recited in claim 2.

Like GB '920, Irie teaches an electroplating bath for depositing a zinc-nickel alloy. Irie teaches that adding *less than 2 g/l of* at least one of Al^{3+}, Mg^{2+}, Fe^{3+}, Cr^{3+}, *In^{3+} and Sb^{3+}* to the bath (col. 2, lines 56-65; and col. 3, lines 45-47) electroplates a Zn-Ni alloy that exhibits considerably good corrosion resistance with a single plated layer (col. 1, lines 58-62).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the bath described by GB '920 with wherein the electroplating bath comprises from about 0.01 g/dm^2 to about 10 g/dm^2 of one or more ionic species selected from ions of Te^{+4}, Bi^{+3} and Sb^{+3}, with the proviso that when the ionic species comprises Te^{+4}, the bath further comprises one or more additional ionic species selected from ions of Bi^{+3}, Sb^{+3}, Ag^{+1}, Cd^{+2}, Co^{+2}, Cr^{+3}, Cu^{+2}, Fe^{+2}, In^{+3}, Mn^{+2}, Mo^{+6}, P^{+3}, Sn^{+2} and W^{+6}; and wherein when the ionic species comprises one or more of

Bi^{+3} or Sb^{+3}, the bath further comprises one or more additional ionic species selected from ions of Ag^{+1}, Cd^{+2}, Co^{+2}, Cr^{+3}, Cu^{+2}, Fe^{+2}, In^{+3}, Mn^{+2}, Mo^{+6}, P^{+3}, Sn^{+2} and W^{+6} because adding less than 2 g/l of at least one of Al^{3+}, Mg^{2+}, Fe^{3+}, Cr^{3+}, In^{3+} and Sb^{3+} to the bath would have electroplated a Zn-Ni alloy that exhibits considerably good corrosion resistance with a single plated layer as taught by Irie (col. 1, lines 58-62; col. 2, lines 56-65; and col. 3, lines 45-47).

c. Wherein the alkylene amine of (i) comprises ethylenediamine or its methyl-substituted derivatives; propylenediamine or its methyl-substituted derivatives; diethylenetriamine or its methyl-substituted derivatives; or a higher alkylene polyamine, as recited in claim 45.

The proviso is only effective for Te^{+4} and dependent claim 45 would not further limit the parent claim if the other species, i.e., Bi^{+3} or Sb^{+3}, are met.

VII. Claims **43, 46-48 and 50-54** are rejected under 35 U.S.C. 103(a) as being unpatentable over **GB 2,104,920** ('920) in combination with **JP 64-68488** ('488).

GB '920 and JP '488 are as applied for the reasons as discussed above and incorporated herein.

VIII. Claims **43-47 and 49-54** are rejected under 35 U.S.C. 103(a) as being unpatentable over **GB 2,104,920** ('920) in combination with **Irie et al.** (US Patent No.

4,581,107).

GB '920 and Irie are as applied for the reasons as discussed above and incorporated herein.

IX. Claims **55-57 and 59-64** are rejected under 35 U.S.C. 103(a) as being unpatentable over **GB 2,104,920** ('920) in combination with **Irie et al.** (US Patent No. 4,581,107).

GB '920 and Irie are as applied for the reasons as discussed above and incorporated herein.

X. Claim **58** is rejected under 35 U.S.C. 103(a) as being unpatentable over **GB 2,104,920** ('920) in combination with **Irie et al.** (US Patent No. 4,581,107) as applied to claims 55-57 and 59-64 above, and further in view of **JP 64-68488** ('488).

GB '920 and Irie are as applied as discussed above and incorporated herein.

The electroplating bath of GB '920 differs from the instant invention because GB '920 does not disclose wherein the concentration of Bi^{+3} is in the range from *0.2 to 2 g/dm^2*, as recited in claim 58.

Like GB '920, JP '488 teaches an electroplating bath for depositing a zinc-nickel alloy. JP '488 teaches that adding *1 to 100 mg/l of Bi^{+3} ions* to the bath increases a nickel content of a plating layer and the corrosion resistance of the plating layer (page 4, line 24 to page 5, line 12).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the concentration of Bi^{+3} is described by JP '488 with wherein the concentration of Bi^{+3} is in the range from 0.2 to 2 g/dm^2 (= 200 mg/l to 2000 mg/l) because adding 1 to 100 mg/l of Bi^{+3} ions to the bath would have increased a nickel content of a plating layer and the corrosion resistance of the plating layer as taught by JP '488 (page 4, line 24 to page 5, line 12).

It has been held that changes in temperature, concentration or both, is not a patentable modification; however, such changes may impart patentability to a process if the ranges claimed produce new and unexpected results which are different in kind and not merely in degree from results of the prior art, such ranges are termed "critical" ranges and Applicant has the burden of proving such criticality; even though Applicant's modification results in great improvement and utility over the prior art, it may still not be patentable if the modification was within capabilities of one skilled in the art; more particularly, where general conditions of the claim are disclosed in the prior art, it is not inventive to discover optimum or workable ranges by routine experimentation. *In re Aller*, 220 F2d 454, 456, 105 USPQ 233, 235 (CCPA 1955) and MPEP § 2144.05.

XI. Claims **1, 3-4, 6-10 and 45** is rejected under 35 U.S.C. 103(a) as being unpatentable over **GB 2,104,920** ('920) in combination with **Wolski et al.** (US Patent No. 4,572,768).

GB '920 is as applied for the reasons as discussed above and incorporated

herein.

The electroplating bath of GB '920 differs from the instant invention because GB '920 does not disclose the following:

a. Wherein the electroplating bath comprises from about *0.01 g/dm^2 to about 10 g/dm^2* of one or more ionic species selected from ions of Te^{+4}, Bi^{+3} and *Sb^{+3}*, with the proviso that when the ionic species comprises Te^{+4}, the bath further comprises one or more additional ionic species selected from ions of Bi^{+3}, Sb^{+3}, Ag^{+1}, Cd^{+2}, Co^{+2}, Cr^{+3}, Cu^{+2}, Fe^{+2}, In^{+3}, Mn^{+2}, Mo^{+6}, P^{+3}, Sn^{+2} and W^{+6}, as recited in claim 1.

b. Wherein the concentration of Sb^{+3} is in the range of from 0.1 to 3 g/dm^3, as recited in claim 9.

Like GB '920, Wolski teaches an electroplating bath for depositing a zinc-nickel alloy. Wolski teaches *600-1800 ppm of antimony* in the bath (col. 4, Example 3).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the bath described by GB '920 with wherein the electroplating bath comprises from about 0.01 g/dm^2 to about 10 g/dm^2 (= 10 ppm to 10000 ppm) of one or more ionic species selected from ions of Te^{+4}, Bi^{+3} and Sb^{+3}, with the proviso that when the ionic species comprises Te^{+4}, the bath further comprises one or more additional ionic species selected from ions of Bi^{+3}, Sb^{+3}, Ag^{+1}, Cd^{+2}, Co^{+2}, Cr^{+3}, Cu^{+2}, Fe^{+2}, In^{+3}, Mn^{+2}, Mo^{+6}, P^{+3}, Sn^{+2} and W^{+6}; and wherein the concentration of Sb^{+3} is in the range of from 0.1 to 3 g/dm^3 because adding 600-1800 ppm of antimony to the bath would have produced a barrier layer of nickel, zinc and antimony resisting

undercutting more than the barrier layers formed of nickel and zinc or of zinc and antimony (col. 4, lines 61-64).

The reason or motivation to modify the reference may often suggest what the inventor has done, but for a different purpose or to solve a different problem. It is not necessary that the prior art suggest the combination to achieve the same advantage or result discovered by the Applicants. *In re Linter* 458 F.2d 1013, 173 USPQ 560 (CCPA 1972); *In re Dillon* 919 F.2d 688, 16 USPQ2d 1897 (Fed. Cir. 1990), *cert. denied*, 500 US 904 (1991); and MPEP § 2144.

XII. Claims **43, 46-47 and 49-54** are rejected under 35 U.S.C. 103(a) as being unpatentable over **GB 2,104,920** ('920) in combination with **Wolski et al.** (US Patent No. 4,572,768).

GB '920 and Wolski are as applied for the reasons as discussed above and incorporated herein.

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within

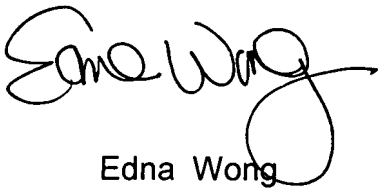
TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Edna Wong whose telephone number is (571) 272-1349. The examiner can normally be reached on Mon-Fri 7:30 am to 4:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nam Nguyen can be reached on (571) 272-1342. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information

system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



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EW
August 31, 2007